Assessing biomarkers on exposure, effects and susceptibility for environmental and occupational exposure of various range of benzene

ABSTRACT

Background: Benzene is primarily routed by inhalation which highly sensitive to blood parameters as bone marrow is their target organ. The ability of benzene even in low exposure levels may induce human bone marrow suppression resulting in blood diseases such as leukopenia, anemia, thrombocytopenia, aplastic anemia, and pancytopenia. In the occupational setting, the most common benzene-exposed workers are from the petrochemical industries and petrol distribution such as gasoline pumps. Benzene also generated primarily by mobile exhaust and some from various of anthropogenic sources at environmental atmosphere and occupationally exposed in the policemen traffic, taxi and bus drivers, and street vendors in long-length time with low concentration exposure. Methodology: This paper reviewed published articles on biomarkers exposure, effects and susceptibility as the useful tools for benzene exposure assessment in the occupational and environ-mental setting. Data from previous epidemiological studies relevant to benzene exposure in various occupational and en-vironmental setting is also summarized. Results: Based on these analyses, the findings agreed that these biomarkers are could suggest in linking the benzene exposure with possible adverse health effects. The biological monitoring used in epi-demiological studies isuseful in providing an understanding of activation and detoxification of benzene in both the occu-pational and general population as they are exposed to wide range of benzene concentration. Conclusion. The biomarkers of exposure, effects, and susceptibility utilized for benzene exposure assessment are valid tools in determining the greatest potential risk as well as an early biological effect which then caused a related specific disease.

Keyword: Benzene exposure; Biomarkers; Genetic polymorphisms and environmental and occupational population